

Claims

1.-39. (canceled)

40. (currently amended) A method of inducing senescence of a cell, comprising altering the level of a nucleostemin polypeptide comprising an amino acid sequence at least ~~80%~~ 95% identical to SEQ ID NO: ~~[[6]~~10, wherein the amino acid sequence has the biological and functional characteristics of the nucleostemin polypeptide set forth as SEQ ID NO: 10, wherein altering the level of the nucleostemin polypeptide comprises:
contacting the cell with an agent that reduces or increases the level of nucleostemin; and
determining senescence of the cell, thereby inducing senescence of the cell.

41. (withdrawn and currently amended) The method of claim 40, wherein altering the level of the nucleostemin polypeptide comprises increasing the level of the nucleostemin polypeptide.

42. (currently amended) The method of claim 40, wherein altering the level of the nucleostemin polypeptide comprises decreasing the level of the nucleostemin polypeptide.

43. (original) The method of claim 40, wherein the nucleostemin polypeptide comprises an amino acid sequence set forth as SEQ ID NO: 6.

44. (original) The method of claim 40, wherein the nucleostemin polypeptide comprises an amino acid sequence set forth as SEQ ID NO: 4.

45. (original) The method of claim 40, wherein the nucleostemin polypeptide comprises an amino acid sequence set forth as SEQ ID NO: 2.

46. (original) The method of claim 40, wherein the nucleostemin polypeptide comprises an amino acid sequence set forth as SEQ ID NO: 10.

47. (original) The method of claim 40, wherein the cell is a tumor cell.

48. (currently amended) The method of ~~claim~~ claim 40, wherein the cell is a stem cell.

49. (original) The method of claim 40, wherein the cell is *in vitro*.

50. (original) The method of claim 40, wherein the cell is *in vivo*.

51. (currently amended) A method of inducing senescence of a tumor cell in a subject, comprising

administering to the subject a therapeutically effective amount of an agent that identified as one that alters the level of a nucleostemin polypeptide comprising an amino acid sequence at least ~~80%~~ 95% identical to SEQ ID NO: 6, wherein the amino acid sequence has the biological and functional characteristics of the nucleostemin polypeptide set forth as SEQ ID NO: 6; and measuring the senescence of the tumor cell in the subject, thereby inducing senescence of the tumor cell in the subject.

52. (original) The method of claim 51, wherein the agent is a small inhibitory RNA.

53. (withdrawn) The method of claim 51, wherein the agent is a polynucleotide encoding a nucleostemin polypeptide.

54. (withdrawn) The method of claim 51, wherein the agent is a p53.

55.-58. (canceled)

56. (currently amended) The method of claim ~~[[46]]~~ 48, wherein the stem cell is a central nervous system (CNS) stem ~~tumor~~ cell.

57.-60. (canceled)

61. (currently amended) The method of claim ~~[[46]]~~40, wherein altering the level of the nucleostemin polypeptide comprises introducing into the cell a small inhibitory RNA that specifically binds a polynucleotide encoding the nucleostemin polypeptide.

62.-63. (cancelled)

64. (withdrawn) The method of claim 40, wherein altering the level of the nucleostemin polypeptide comprises increasing transcription of a nucleic acid sequence encoding the nucleostemin polypeptide.

65. (withdrawn) The method of claim 40, wherein altering the level of the nucleostemin polypeptide comprises altering the amount of the polypeptide bound to p53.

66. (currently amended) The method of claim ~~[[40]]~~61, wherein ~~altering the level of the nucleostemin polypeptide comprises introducing into the cell a~~ the small inhibitory RNA consists of a nucleic acid sequence as set forth as SEQ ID NO: 7 ~~that specifically binds a polynucleotide encoding the nucleostemin polypeptide.~~

67. (new) The method of claim 52, wherein the small inhibitory RNA consists of a nucleic acid sequence as set forth as SEQ ID NO: 7.

68. (new) A method of inducing senescence of a stem cell, comprising reducing the level of a nucleostemin polypeptide comprising an amino acid sequence at least 95% identical to SEQ ID NO: 10, wherein the amino acid sequence has the biological and functional characteristics of the nucleostemin polypeptide set forth as SEQ ID NO: 6, and wherein reducing the level of the nucleostemin polypeptide comprises:

contacting the stem cell with a small inhibitory RNA identified as one that reduces the level of nucleostemin; and

evaluating the cell for senescence, thereby inducing senescence of the cell.

69. (new) The method of claim 68, wherein the nucleostemin polypeptide comprises an amino acid sequence set forth as SEQ ID NO: 6.

70. (new) The method of claim 68, wherein the nucleostemin polypeptide comprises an amino acid sequence set forth as SEQ ID NO: 4.

71. (new) The method of claim 68, wherein the nucleostemin polypeptide comprises an amino acid sequence set forth as SEQ ID NO: 2.

72. (new) The method of claim 68, wherein the nucleostemin polypeptide comprises an amino acid sequence set forth as SEQ ID NO: 10.

73. (new) The method of claim 68, wherein the stem cell is a CNS stem cell.

74. (new) The method of claim 68, wherein the small inhibitory RNA consists of a nucleic acid sequence as set forth as SEQ ID NO: 7.

75. (new) The method of claim 47, wherein the tumor cell is an osteocarcinoma cell.

76. (new) The method of claim 75, wherein the osteocarcinoma cell is an U2OS cell.